

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Satoshi SENGU et al.

Group Art Unit : 2443

Appl. No. : 10/543,176

Examiner : George C. Neurauter

Filed : July 22, 2005

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For : COMMUNICATION CONTROL APPARATUS, COMMUNICATION
TERMINAL APPARATUS, SERVER APPARATUS AND
COMMUNICATION CONTROL METHOD

**REQUEST FOR CONTINUED EXAMINATION AND
SUBMISSION UNDER 37 C.F.R. § 1.114**

Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop RCE
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

In response to the outstanding Advisory Action of February 26, 2009 and the Final Official Action of November 18, 2008, in which a three-month shortened statutory period for response was set to expire on February 26, 2009, the period for responding having been extended to expire on March 26, 2009 (since the Response Under 37 C.F.R. §1.116 was filed on that two-month due date) and concurrently with the filing of Request for Continued Examination, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection in view of the herein contained amendments and remarks:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 5 of this paper.

AMENDMENT TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A communication control apparatus comprising:

a detection section that detects at least one of a radio environment, comprising a radio communication field intensity and a modulation scheme for radio communication or a network environment in a layer below the transport layer, comprising identification information of a network with which the communication control apparatus is associated and a communication condition of the network,

a lower layer management section that stores information of the detected radio environment or network environment, monitors whether or not a change has occurred in the radio environment or in the network environment and provides a monitoring result to an application upper-layer, ~~above a transport layer~~, without the result being conveyed through the transport layer; and

a control section that performs communication service control in the application upper layer, ~~above the transport layer~~, based upon the monitoring result received from the lower layer management section without the result being conveyed through the transport layer.

2. (Currently Amended) The communication control apparatus according to claim 1, wherein:

the lower layer management section monitors a change in the radio environment or in the network environment in the a-lower layer below the transport layer in an OSI (Open System Interconnection) hierarchical model; and

the control section performs communication service control by means of the application ~~upper~~ layer, ~~above the transport layer~~, in accordance with the change in the environment in the lower layer below the transport layer.

3. (Previously Presented) The communication control apparatus according to claim 2, wherein the control section comprises a decision section that, when the change in the radio environment or in the network environment satisfies a predetermined condition, decides on a control operation for changing the communication service in accordance with the change in the radio environment or in the network environment .

4. (Canceled)

5. (Previously Presented) The communication control apparatus according to claim 3, wherein the decision section changes operation relating to at least one of service quality in network transmission, signaling information transmission/reception, or transmit data transmission/reception.

6. (Previously Presented) The communication control apparatus according to claim 5, wherein:

the control section further comprises a notification section that, when negotiation with a communicating station is necessary, notifies the communicating station that a call involving the communicating station is to be updated; and

the decision section decides on a control operation after a call has been updated.

7. (Original) A communication terminal apparatus comprising the communication control apparatus according to claim 1.

8. (Original) A server apparatus comprising the communication control apparatus according to claim 1.

9. (Currently Amended) A communication control method of a communication control apparatus, the method comprising:

detecting at least one of a radio environment, comprising a radio communication field intensity and a modulation scheme for radio communication or a network environment, comprising identification of a network with which the communication control apparatus is associated and a communication condition of the network,

storing information of the detected radio environment or network environment, monitoring whether or not a change has occurred in the radio environment or in the network environment and providing a monitoring result to an application upper-layer, ~~above a transport layer~~, without the result being conveyed through the transport layer; and

performing communication service control in the application upper-layer, ~~above the transport layer~~, based on the monitoring result received without the result being conveyed through the transport layer.

REMARKS

Reconsideration and continued examination of the present application is respectfully requested. Upon entry of the present amendment, claims 1, 2 and 9 will have been amended. In particular, claims 1, 2 and 9 will have been amended to clarify that an upper layer above a transport layer is, in one non-limiting embodiment, an application layer. Accordingly, claims 1-3 and 5-9 will remain pending in the present application and are resubmitted for examination.

In the outstanding Final Official Action, the Examiner rejected claims 1-3 and 5-9 under 35 U.S.C. § 112, first paragraph. The Examiner asserted that the claims fail to comply with the enablement requirement and that they contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. Further, in the Advisory Action the Examiner asserted that while the specification nominally discloses conveying a result through a transport layer, wherein a result is conveyed between layers both above and below, the specification does not adequately enable this as such disclosure is unconventional in terms of what is known in the art, in the Advisory Action.

Applicants respectfully traverse the above noted rejection and submit that it is inappropriate with respect to the claims pending herein. Applicants respectfully submit that one skilled in the art would be able to produce a system that is capable of avoiding the use of a transport layer without undue experimentation. In this regard, the “raw socket” is a construct of the C programming language allowing one to bypass a computer’s handling of TCP/IP connections. Rather than transmitting a packet through normal layers of encapsulation/decapsulation in the manner performed by a TCP/IP stack implementation, a packet is directly passed to a requesting application. That is, the application layer receives a raw packet upon which no TCP/IP processing has been performed. The application that obtains the

raw packet is responsible for stripping the lower layer headers, analyzing the packet, and performing the tasks that the TCP/IP stack implementation normally performs.

Further, the Examiner is respectfully directed to the WinPcap and LibPcap libraries developed for the C programming language. Each of these applications captures and transmits network packets bypassing the protocol stack. Any number of various packet capture and packet sniffer applications enable a software developer to obtain, at an application layer, raw data from lower layers without performing processing associated with a transport layer. In this regard, conventional packet capture tools have the ability to capture packet data from any layer between and including the data link layer through the application layer, including either or both header and payload.

Accordingly, one of ordinary skill in the art could feasibly employ any of the above-referenced applications to perform communication service control in the application layer, based upon the monitoring result received from the lower layer management section without the result being conveyed through the transport layer, as recited in independent claim 1.

In this regard, Applicants invention is not directed merely to “conveying a result through a transport wherein the result is conveyed between layers both above and below” per se. Rather Applicants invention, as defined by the pending claims, utilizes the above feature.

Applicants’ invention may be employed to detect a state of congestion directly from a lower layer below a transport layer and modify video stream layers coded and transmitted by a transmitting side. That is, an application’s connection control section resets a video or voice parameter appropriate with respect to the radio environment based on the detection of congestion (*see, e.g.*, page 37, lines 1-12 of the Application specification as filed).

As discussed previously in the Response under 37 C.F.R. §1.116, the subject matter recited in the instant claims is clearly and unambiguously described in the specification of the present application. Further, the specification of the present application is adequate to enable one skilled in the art to make and/or use the claimed invention. Accordingly, Applicants resubmit the Applicants' arguments for the Examiner's consideration.

Applicant's invention is directed to a communication control apparatus, a non-limiting example of which is recited in presently pending claim 1. In particular, the present invention relates to a communication control apparatus which includes a detection section that detects at least one of a radio environment, comprising a radio communication field intensity and a modulation scheme for radio communication, or a network environment, in a layer below the transport layer comprising identification information of a network with which the communication control apparatus is associated and a communication condition of the network. A lower layer management section stores information of the detected radio environment or network environment, monitors whether or not a change has occurred in the radio environment or in the network environment and provides a monitoring result to an application layer, without the result being conveyed through the transport layer. A control section performs communication service control in the application layer, based upon the monitoring result received from the lower layer management section without the result being conveyed through the transport layer.

The above noted combination of features, which make up an aspect of Applicants' invention, is fully and adequately described in the specification of the present application. Accordingly, Applicants respectfully request withdrawal of the outstanding rejection together with an indication of the allowability of all of the claims pending in the present application,

particularly since no prior art was applied against the pending claims in the outstanding Official Action.

In setting forth the rejection, the Examiner asserted that the specification does not describe providing a monitoring result to an application layer, without the result being conveyed through the transport layer. It is respectfully submitted that the Examiner is incorrect.

In particular, Applicants respectfully direct the Examiner's attention to, inter alia, page 10, line 26 through page 11, line 28 of the disclosure of the present application. As disclosed thereat, the lower layer management section 22 utilizes a database to manage the communication environment conditions detected by the device control section 21 and the network distribution control section 20. The lower layer management section 22 reports the information recorded in the database to the connection control section 12, which is explicitly described as an upper layer section. The connection control section 12 is part of an application or is used directly by an application through the operation of the lower layer management section 22. Accordingly, device or network layer communication conditions are reported to the application layer (page 11, lines 16-21), without being conveyed through the transport layer as explicitly illustrated in figure 2.

In other words, the lower layer management section 22 manages and registers (i.e., stores) communication (i.e. radio or network) environment conditions detected by the device control section 21 and by the network distribution control section 20 by utilizing a provided database. In the event of a change in the recorded information, the lower layer management section 22 reports the change in the information (i.e. a monitoring result) to the connection control section 12.

Further, page 11, line 16-18 explicitly describes the connection control section 12 as part of an application and one of ordinary skill in the art would understand that an application layer is an upper layer with respect to a transport layer. The Examiner's attention is also respectfully directed to page 9, lines 3-7.

Accordingly, the Examiner's assertion, in the statement of the rejection, that the specification merely describes that the gist of the present invention is that control related to a session between a media stream data transmission source and a reception destination is performed based on information relating communication conditions of a layer lower than the transport layer, is clearly incorrect.

Further, the recitation, at page 11, line 4 that the lower layer management section 22 reports various kinds of information recorded in a database to connection control section 12, which is an upper layer section provides explicit support for "provides a monitoring result to an upper layer, above a transport layer, without the result being conveyed through the transport layer". The Examiner's attention is again respectfully directed to figure 2, which shows transport control section 19, and also explicitly illustrates that the connection between lower layer management section 22 and the connection control section 12 does not involve transmitting data through the transport control section 19.

Yet additionally, a detailed description of the operations that take place in the application layer (i.e. the upper layer) for acquiring and utilizing information from the lower layer management section 22 is set forth at, inter alia, page 16, line 6 through page 20, line 23 with and particular reference to figure 5, steps ST1200 through ST1400 thereof.

In particular, the device control section 21 constantly monitors and determines whether or not the radio environment has changed. If and when the device control section 21 detects that

the radio field intensity has weakened, the value of the field intensity after the change is reported to the lower layer management section 22 which stores the reported value in the field intensity location within the management database. Not only does the device control section 21 inform the lower layer management section 22 of a change in the field intensity, but it can also inform the lower layer management section 22 of a change in the state of the radio link. The lower layer management section 22 can then store the reported change in the relevant location within the management database. In a generally similar fashion, the device control section 21 may also inform the lower layer management section 22 regarding changes in the modulation scheme or in the radio access point congestion or even in the radio base station congestion. Examples of data stored in the management database of the lower layer management section 22 are illustrated in figure 6A.

In a generally similar fashion and concurrently (i.e., in parallel) with the detection of radio environment changes by the device control section 21, the network distribution control section 20 detects changes in the network environment. For example, the network distribution control section 20 can detect changes in the network prefix and reports the changed prefix value (i.e. network ID) to the lower layer management section 22 where these changed values are stored in the appropriate location within the management database. The network distribution control section 20 may also inform the lower layer management section 22 regarding changes in the number of retransmissions or in the size of the receive buffer.

As set forth at page 19, line 19, the lower layer management section 22 constantly monitors whether or not a newly reported value has been stored in the management database and when such a value is stored, the change is reported to the connection control section 12 of the application, which performs application control based upon the reported information from the

lower layer management section 22. Accordingly, Applicants disclosure provides, in specific detail, how the claimed invention avoids the transport layer in the transmission of information between the lower layer management section and the upper layer connection control section. Thus, the disclosure does not, contrary to the Examiner's assertion, require "some sort of undue experimentation".

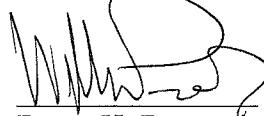
Applicants respectfully submit that one of ordinary skill in the art would be able to directly convey data between layers that are not adjacent to each other. Therefore, Applicants respectfully submit that claim 1 is adequately enabled.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection, together with an indication of the allowability of all the claims pending in the present application, in due course.

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so. Applicants have discussed and traversed the Examiner's rejection of the claims in the present application as being based upon a disclosure which fails to comply with the enablement requirement of 35 USC 112, first paragraph. Applicants have pointed out where the disclosure of the present application provides explicit, adequate and sufficient support for the recitations of Applicants' claims and have referred the Examiner to several particular portions of the detailed description and the drawings of the present application, which provide full enablement for the claimed subject matter. Accordingly, Applicants have provided a clear evidentiary basis supporting the patentability of all of the claims in the present application and respectfully request an indication to such effect, in due course.

Should the Examiner have any questions or comments regarding this Response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,
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